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showing four distinguished directors of foreign geological surveys, together with Dr. Van Hise and the author, on an excursion which followed the congress. But all these things are passed over lightly in the book. Pumpelly was most happy in his married life and had innumerable friends among scientific men and men distinguished in other directions; but he likes best to describe adventures among strange peoples.

This he does again toward the close of the book, for at the age of nearly seventy he conducted an expedition into Central Asia for the Carnegie Institution accompanied by his son, and with the cooperation of Professor W. M. Davis and Professor Ellsworth Huntington. They made important discoveries concerning prehistoric civilizations and geological and climatic changes. The next to last chapter tells of revisiting the Arizona desert in 1915. The final chapter discusses ancestry, heredity and environment.

THE USE OF ASPHYXIATING GAS

THE British Ministry of Information, according to the *British Medical Journal*, recently issued a communication relating to a statement sent out by the official German wireless to the effect that the idea of using poison gas in warfare originated with the British Admiral Lord Dundonald, better known to fame as Lord Cochrane. It is a matter of history that in 1812 Dundonald submitted to the Prince Regent, afterwards George IV., secret war plans which included the use of an asphyxiating gas. A committee of experts to whom this proposal was referred expressed the opinion that the mode of attack was "infallible and irresistible," but it was not sanctioned. In 1840, when there was a threat of war with France, Dundonald again submitted his plan to the British Government and offered by means of it to annihilate the French fleet.

The Duke of Wellington thought well of the idea, but with his practical good sense pointed out that "two could play at that game," a fact which the Germans have learnt to their cost. In 1846 the plans were again referred to a committee, which reported that it was not desirable that any experiment should be made on the ground that part of the plans "would not accord with the principles of civilized warfare." Later, when again there was talk of war, Dundonald was asked about his plan, but once more it was rejected, the only objection to it being that it was "too terrible for use by a civilized community." Dundonald's account of the plan is given in the correspondence of Lord Panmure, who was War Minister during the Crimean War. In a memorial dated August 7, 1855, he states that when viewing some sulphur kilns in 1811 he observed that the fumes which escaped in the rude process of extracting the material, though first elevated by heat, soon fell to the ground, destroying all vegetation and endangering animal life to a great distance. With reference to the materials required for the expulsion of the Russians from Sebastopol, experimental trials had, he said, shown that about five parts of coke effectually vaporize one part of sulphur. Four or five hundred tons of sulphur and two thousand tons of coke would be sufficient. Besides these materials it would be necessary to have as much bituminous coal and a couple of thousand barrels of gas or other tar for the purpose of masking the fortifications to be attacked, with dry firewood to kindle the fires, which ought to be kept in readiness for the first favorable and steady breeze. Dundonald offered to direct the application of the plan himself, but the proposal was rejected. The use of asphyxiating gas is a very ancient device. Smoking out the enemy was one of the regular manoeuvres of war in antiquity. Polybius relates



FOUR DIRECTORS OF FOREIGN GEOLOGICAL SURVEYS, 1891
Group with the directors of the Swiss, Russian, French, and
Norwegian Geological Surveys.

that at the siege of Ambracia by the Romans under Marius Fulvius Nobilior (B.C. 189) the Ætolians filled jars with feathers which they set on fire, blowing the smoke with bellows into the face of the Romans in the countermines. At the great naval battle fought in the waters of Ponza between Alfonso of Aragon and Genoa in 1435 the Genoese carried vessels filled with quicklime and red-hot cinders, the smoke from which was blown by the wind against the enemy. Leonardo da Vinci, who among his many other accomplishments was a notable military engineer, suggested the use of poisonous powders, such as yellow arsenic and verdigris, to be thrown from the topmasts of ships so as to choke the enemy. This formed a part of the war instructions given by Leonardo to the Republic of Venice in 1499, when the Turks had passed the Isonzo and threatened St. Mark's.

THE STUDENT'S ARMY CORPS

THE possibilities of organization in our educated democracy are shown by the arrangements which have been made to train students for the army in our colleges and universities. Over four hundred institutions have placed their faculties, buildings and equipment at the service of the government and in each of these a student's corps will be in training after the first of October. In the eight institutions for higher education in New York City, there may be some 20,000 men in training. If there are half so many in other institutions throughout the country there would be 500,000 recruits from whom will be selected candidates for officers' commissions and technical posts in the army.

THE War Department advises all young men, who were planning to go to college this fall, to do so. Each should go to the college of his choice, matriculate and enter as a regular student. He will have registered with his local board and opportunity

will be given for all the regularly-enrolled students to be inducted into the Students' Army Training Corps at the schools where they are in attendance. Thus the Corps will be organized by voluntary induction under the Selective Service Act, instead of by enlistment as previously contemplated. The War Department announces that the students become soldiers in the United States Army, uniformed, subject to military discipline and with the pay of a private. They will simultaneously be placed on full active duty and contracts will be made as soon as possible with the colleges for the housing, subsistence and instruction of the student soldiers.

The student-soldiers will be given military instruction under officers of the Army and will be kept under observation and test to determine their qualifications as officer-candidates, and technical experts such as engineers, chemists and doctors. After a certain period, each man will be selected according to their performance, and assigned to military duty in one of the following ways: (a) He may be transferred to a central officers' training camp. (b) He may be transferred to a non-commissioned officers' training school. (c) He may be assigned to the school where he is enrolled for further intensive work in a specified line for a limited specified time. (d) He may be assigned to the vocational training section of the corps for technician training of military value. (e) He may be transferred to a cantonment for duty with troops as a private.

Similar sorting and reassignment of the men will be made at periodical intervals, as the requirements of the service demand. It can not be now definitely stated how long a particular student will remain at college. This will depend on the requirements of the mobilization and the age group to which he belongs. In order to keep the unit at adequate strength, men will be admitted from secondary